Distributed Utility Integration Test "DUIT"

Contract #: 500-01-033
Contractor: Distributed Utility Associates
Subcontractors: Endecon Engineering: Pacific Gas and Electric Company
Contract Amount: $2,049,850
Match Amount: $547,151
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Status: Active

Project Description:
The purpose of this project is to advance the state-of-the-art of distributed resources integration and give new insights into distributed energy resource grid support issues. The increasing potential of distributed resources in emerging utility markets has focused attention on two critical issues: interconnection of distributed resources with electric distribution systems, and the unknown nature of potential interactions between multiple distribution devices. Interconnection is a critical issue because of the diversity of distributed technologies and the variability of interconnection standards and practices from state to state and utility to utility. Another critical issue is that the potential for interactions between distributed resources in close proximity within a distribution system is not known, simply because not enough operating experience has been gained to date.

This Distributed Utility Integration Test (DUIT) is the next step in assuring the safe, reliable, secure and cost-effective inclusion of distributed resources into the electric systems of the future. By collaborating with DUA, the Commission will advance the state-of-the-art of distributed resources integration and strengthen its leadership role in distributed power. By examining current and emerging technologies and operational concepts to properly integrate diverse distributed resources, this project will give new insights into grid support issues and ultimately suggest innovative system protection design concepts.

The goals and objectives of this project are to provide the following:

- Determine what impact large numbers of Distributed Energy Resources will have on the electrical system.
- Prove the feasibility and the integration of diverse distributed resources in a distribution system.
- Provide a testing ground for observing and measuring the interactions between the distributed technologies on the distribution system.

Achieving these goals and objectives requires full-scale implementation testing and demonstration of distributed generation technologies in an actual utility installation.

This project supports the PIER program objective of:

- Improving the reliability/quality of California's electrical system by advancing distributed generation technologies that will help diversify and strengthen the system.

Proposed Outcomes:

1. Develop a DER procurement process.
2. Develop a test plan.
3. Develop specifications for the test management control system.
4. Design a data acquisition system.
5. Develop software for the test management control system.
6. Perform the engineering necessary to prepare the facility testing.
7. Perform the tests.

Project Status:

- Final DER test list has been submitted.
- The DUIT test plan has been approved.
- The DUIT test facility has been commissioned.
- "Single Unit" anti-islanding tests has been completed and reported.
- "Multiple Unit" anti-islanding testing is progressing